

1500 proembryos, but actually it produces only 10 to 20 seeds. The factors responsible for the difference between the theoretical and the actual output are considered, both in the field study and in the cytological work.—CHARLES J. CHAMBERLAIN.

**Geotropic curvature.**—PORODKO, reinvestigating the statement of KOHL that “the geotropic curvature extends also to parts of the stem in which growth can no longer be demonstrated,” comes to the contrary conclusion, though he does not discover the source of KOHL’s error, unless in the fact that he did not use the microscope in his measurements.<sup>24</sup>

BACH’S conclusion that the presentation and reaction times for geotropic curvatures are not affected by shaking and jarring, has been welcomed by opponents of the statolith theory of geoperception as depriving it of an important support, though BACH himself does not so use his data. HABERLANDT, whose experiments in shaking and jarring led him to quite the opposite conclusion, reexamines BACH’S data, criticizes his methods somewhat, and interprets some of his experiments as showing the very thing which BACH thought they did not show.<sup>25</sup> HABERLANDT also pays his compliments to LINSBAUER, who raised a theoretical objection to the value of the jarring experiments. The statolith theory has a watchful champion, ready to meet all comers.—C. R. B.

**A lycopod with a seedlike structure.**—Miss BENSON’S abstract of her paper on *Miadesmia* was noticed in this journal.<sup>26</sup> The full paper has now appeared,<sup>27</sup> and the fuller description and plates make the situation more evident. The discovery of the sporophylls of this minute, herbaceous, paleozoic lycopod, has shown a clear relationship to the ligulate Lycopodiaceae, especially *Selaginella*. The megasporangium produces a single, thin-walled spore, which germinates *in situ*. An integument is developed around the sporangium, leaving a micropyle; and from the surface of the integument numerous long processes develop, giving quite a fringed look to the apparatus. At maturity the sporophyll is shed, the whole structure resembling a winged and fringed seed. The relation of this “integument” to the “velum” of other groups is vague and apparently hardly worth considering; but another case of integumented sporangium, to be added to the previously described *Lepidocarpon*, is quite worth while.—J. M. C.

**Dwarf male prothallia.**—BOODLE<sup>28</sup> has observed that if *Todea Fraseri*, a filmy species, be kept in a sufficiently damp atmosphere, the sporangia do not

<sup>24</sup> PORODKO, T., Nimmt die ausgewachsene Region des orthotropen Stengels an der geotropischen Krümmung teil? Ber. Deutsch. Bot. Gesells. 26a:3-14. 1908.

<sup>25</sup> HABERLANDT, G., Ueber die Einfluss des Schüttelns auf die Perception des geotropischen Reizes. Ber. Deutsch. Bot. Gesells. 26a:22-28. 1908.

<sup>26</sup> BOT. GAZETTE 44:318. 1907.

<sup>27</sup> BENSON, MARGARET *Miadesmia membranacea* Bertrand; a new palaeozoic lycopod with a seed-like structure. Phil. Trans. Roy. Soc. London B. 199:409-425. pls. 33-37. 1908.

<sup>28</sup> BOODLE, L. A., On the production of dwarf male prothalli in sporangia of *Todea*. Annals of Botany 22:231-243. pl. 16. 1908.